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EXAMINER	
WILSON, ROBERT W	
ART UNIT	**PAPER NUMBER**
2661	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/978,118	GHOSH, MONISHA	
	Examiner	Art Unit	
	Robert W. Wilson	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-24* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/15/01* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Objections

1. Claim 14 is objected to because of the following informalities:

Referring to claim 14, the claim does not clearly define the meaning of the following variables CR, R(i,j) , r(i+d subscript f-j). The examiner suggests that the applicant rewrite claim 14 to clearly define a step which clearly defines all of the variables with a clearly defined post solution. Appropriate correction is required.

Specification

2. The examiner objects to the specification because the specification does not provide a clear written antecedent basis for the variables in claim 14. The following variables CR, R(i,j) , r(i+d subscript f-j lack a clear antecedent basis in the specification. The examiner suggests that the applicant amend the specification to clearly define these variables without adding new matter.

Drawings

3. The applicant's drawings are informal but are not of sufficient quality to be in a published patent. The examiner objects to the quality of the drawings and also objects to the drawings because the drawing have elemental numbers without elemental names. The examiner recommends that applicant add the elemental names associated with the elemental numbers. Also the Figures 2-4 refer to solid lines and dotted lines but the figures only show solid lines. Figure 5 has variables N subscript S. and N subscript P which lack written description or written antecedent basis in the specification. The examiner suggest that the applicant clarify these values without addition new matter. Appropriate action is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 4-7, 10-13, 15, & 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No.: 5,414,699)

Referring to claim 1, Lee teaches: Figures 1 & 2 which shows a method for a communication systems in a directed Sequence-Code Division Multiplex communication system (DS-CDMA). Figures 1 &3 include a transmitter or base station which transmits a DS-CDMA signal which inherently includes multiple information symbols which are destined for receivers or multiple mobile users & which is transmitted simultaneously over a single channel. The transmitter or base station transmits training bit sequences along with a plurality DS-CDMA signals to the receivers or multiple mobile users per Figures 1 & 2. The DS CDMA per col. 1 lines 32-53 inherently utilizes a single channel. (a. generating a pilot sequence). Each of the receives or mobile users have a de-spreading equalizer or adaptive chip equalizer per Figs 4 & 5 which is capable of tracking per col. 2 lines 6-61 (b. providing). The de-spreading equalizer per Fig 5 or adaptive chip equalizer adapts the taps in order to minimize errors per col. 2 lines 6-61 (c. adapting). USER DATA per Fig 5 or symbols are output after the de-spreading equalizer has de-spread the signal based upon a chip in each receiver or mobile (d. dispreading)

Lee does not expressly call for: pilot sequence but teaches a training bits.

The applicant broadly claims that a pilot sequence is utilized for synchronization. Lee teaches that training sequence is transmitted in the DS-CDMA signal in order to provide synchronization for the DS-CDMA signal per Fig 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

In Addition Lee teaches:

Regarding claim 4, Lee teaches generating a plurality of training bit sequences each having a known chipping sequence and transmitting the training bit sequences simultaneously with the signal over the signal channel which results in adapting the taps per Fig 5. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Regarding claim 5, Lee teaches that by sending the training bit sequence accelerates adaptive equalization process per col. 2 lines 6-61. It would have been obvious to one of ordinary skill in the art at the time of the invention that sending a plurality would accelerate the adaptive equalization process on the plurality.

Regarding claim 6, Lee teaches that sending the signals which training bit sequence accelerates the adaptive equalization process per col. 6 lines 6-61. It would have been obvious to one of ordinary skill in the art at the time of the invention that continuously transmitting a training sequence would result in enabling the equalizer to continuously adapt. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence

of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Referring to claim 7, Lee teaches: Figures 1 & 2 shows a Direct Sequence-Code Division Multiplex (DS-CDMA) communication system. Figures 1 &3 include a transmitter or base station which transmits a DS-CDMA signals which inherently includes multiple information symbols which are destined for receivers or multiple mobile users which is inherently transmitted simultaneously over a single channel and which inherently has a channel response (base station for transmitting) The transmitter or base station transmits training bit sequences along with a plurality DS-CDMA signals to the receivers or multiple mobile users per Figures 1 & 2. The DS CDMA per col. 1 lines 32-53 inherently utilizes a single channel (mechanism for generating a pilot sequence). Each of the receivers have a dispreading equalizer or adaptive chip equalizer per Figs 4 & 5 which is capable of tracking per col. 2 lines 6-61 (adaptive chip equalizer provided). The de-spreading equalizer per Fig 5 or adaptive chip equalizer adapts the taps in order to minimize received symbol errors per col. 2 lines 6-61 (mechanism for adapting). USER DATA per Fig 5 or symbols are output after the de-spreading equalizer has de-spread the signal based upon a chip in each receiver or mobile (extract symbols)

Lee does not expressly call for: pilot sequence but teaches a training bits.

The applicant broadly claims that a pilot sequence is utilized for synchronization. Lee teaches that training sequence is transmitted in the DS-CDMA signal in order to provide synchronization for the DS-CDMA signal per Fig 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee a pilot sequence because the training sequence performs the same function as the pilot sequence which is synchronization.

In Addition Lee teaches:

Regarding claim 10, Lee teaches generating a plurality of training bit sequences each having a known chipping sequence and transmitting the training bit sequences simultaneously with the signal over the signal channel which results in adapting the taps per Fig 5 (means). It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Regarding claim 11, Lee teaches that by sending the training bit sequence accelerates adaptive equalization process per col. 2 lines 6-61(adapting mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that sending a plurality would accelerate the adaptive equalization process on the plurality

Regarding claim 12, Lee teaches that sending the signals which training bit sequence accelerates the adaptive equalization process per col. 6 lines 6-61 (mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that continuously transmitting a training sequence would result in enabling the equalizer to continuously adapt. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Referring to claim 13, Lee teaches: Figures 5 shows a method for adapting chip equalizers used for receiving symbols. The applicant does not further define "rapidly fading channels" in the claim limitations; consequently, the examiner has given no weight to "rapidly fading channels" and interpreted "rapidly fading channels" as an intended use.

The transmitter or base station transmits training bit sequences along with a plurality DS-CDMA signals to the receivers or multiple mobile users per Figures 1-3. The DS CDMA per col. 1 lines 32-53 inherently utilizes a single channel (a. generating a pilot sequence). The transmitter or base station transmits a plurality of training bits simultaneously with a signal including multiple information symbols per Fig 3 which is destined for multiple receivers or mobile users per Figs 1-4 respectively (b. transmitting). Each of the receivers or mobile users have a de-spreading equalizer or adaptive chip equalizer per Figs 4 & 5 which is capable of tracking and adapting in order to minimize the received signals error and provide USER DATA per Fig 5 or data sequence for a user per col. 2 lines 6-61 (c. providing). The de-spreading equalizer per Fig 5 or adaptive chip equalizer adapts the taps in order to minimize errors per col. 2 lines 6-61 (d. adapting). USER DATA per Fig 5 or symbols are output after the de-spreading equalizer has de-spread the signal based upon a chip in each receiver or mobile (e. de-spreading)

Lee does not expressly call for: pilot sequence but teaches a training bits.

The applicant broadly claims that a pilot sequence is utilized for synchronization. Lee teaches that training sequence is transmitted in the DS-CDMA signal in order to provide synchronization for the DS-CDMA signal per Fig 3. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee a pilot sequence because the training sequence performs the same function as the pilot sequence which is synchronization.

Referring to claim 15, Lee teaches: Figures 1 & 2 shows an apparatus for transmitting a communication signal including multiple information symbols destined for multiple users simultaneously over a single channel having an inherent channel response. 201 per Fig 3 generates a training sequence for a DS-CDMA signal chipping sequence (mechanism).

Figure 3 is a transmitter device for transmitting the training sequence over a single channel for receipt by the receivers or multiple mobile users per Figs 1 & 4. The DS CDMA per col. 1 lines 32-53 inherently utilizes a single channel. Each of the receivers have a de-spreading equalizer or adaptive chip equalizer per Figs 4 & 5 which is capable of tracking as well as adapting the taps

using the received training sequence in order to minimize the error of received symbol errors per col. 2 lines 6-61(transmitter device). The receiver de-spreads the sequence associated with the mobile user to extract the USER DATA or information per Fig 5 (receiver)

Lee does not expressly call for: pilot sequence but teaches a training bits.

The applicant broadly claims that a pilot sequence is utilized for synchronization. Lee teaches that training sequence is transmitted in the DS-CDMA signal in order to provide synchronization for the DS-CDMA signal per Fig 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee a pilot sequence because the training sequence performs the same function as the pilot sequence which is synchronization.

In Addition Lee teaches:

Regarding claim 18, Lee teaches generating a plurality of training bit sequences each having a known chipping sequence and transmitting the training bit sequences simultaneously with the signal over the signal channel which results in adapting the taps per Fig 5 (means). It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Regarding claim 19, Lee teaches that by sending the training bit sequence accelerates adaptive equalization process per col. 2 lines 6-61(adapting mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that sending a plurality would accelerate the adaptive equalization process on the plurality

Regarding claim 20, Lee teaches that sending the signals which training bit sequence accelerates the adaptive equalization process per col. 6 lines 6-61 (mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that continuously transmitting a training sequence would result in enabling the equalizer to continuously adapt. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization

Referring to claim 21, Lee teaches: Figures 1 & 2 shows a receiver for a communications system capable of receiving USER DATA per Fig 5 or multiple information symbols comprising data sequences destined for each of the receivers or multiple users over a single channel which has an inherent channel response. The DS CDMA per col. 1 lines 32-53 inherently utilizes a single channel.

Each of the receivers have a de-spreading equalizer or adaptive chip equalizer used for simultaneously receiving the communications signal and the training sequence and obtaining an USER DATA or equalized output for a particular user per Figs 4 & 5(adapting chip equalizer)

The de-spreading equalizer or device outputs User Data for a particular user based upon receiving the training bit sequence (device)

The de-spreading equalizer per Fig 5 or adaptive chip equalizer adapts the taps in order to to receive the training sequence in order to extract USER DATA or information symbols for the user which via a single (one or more equalizer taps)

Lee does not expressly call for: pilot signal but teaches a training bits.

The applicant broadly claims that a pilot sequence is utilized for synchronization. Lee teaches that training sequence is transmitted in the DS-CDMA signal in order to provide synchronization for the DS-CDMA signal per Fig 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee a pilot sequence because the training sequence performs the same function as the pilot sequence which is synchronization.

In Addition Lee teaches:

Regarding claim 22, Lee teaches generating a plurality of training bit sequences each having a known chipping sequence and transmitting the training bit sequences simultaneously with the signal over the signal channel which results in adapting the taps per Fig 5 (means). It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization.

Regarding claim 23, Lee teaches that by sending the training bit sequence accelerates adaptive equalization process per col. 2 lines 6-61(adapting mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that sending a plurality would accelerate the adaptive equalization process on the plurality

Regarding claim 24, Lee teaches that sending the signals which training bit sequence accelerates the adaptive equalization process per col. 6 lines 6-61 (mechanism). It would have been obvious to one of ordinary skill in the art at the time of the invention that continuously transmitting a training sequence would result in enabling the equalizer to continuously adapt. It would have been obvious to one of ordinary skill in the art at the time of the invention that the training sequence of Lee is a pilot sequence because the training sequence of Lee performs the same function as the pilot sequence which is synchronization

6. Claims 2-3, 8-9, & 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No.: 5,414,699) in view of Pilot-aided Adaptive MMSE Receivers for DS/CDMA by Caire et. al. which is an IDS document of record.

Referring to claim 2, Lee teaches: the method for communicating information symbols as claimed in claim 1.
Lee does not expressly call for: wherein a power for a transmitted pilot signal is equal to the power of information symbol sequences transmitted for each mobile user.

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters or to transmit a pilot signal equal to the information symbol.

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Referring to claim 3, Lee teaches: the method for communicating information symbols as claimed in claim 2.
Lee does not expressly call for: where as power for a transmitted pilot signal increases, a power transmitted for each mobile user decreases for the same total transmitted power

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters transmitted pilot signal increases, a power transmitted for each mobile user decreases for the same total transmitted power

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Referring to claim 8, Lee teaches: The DS-CDMA system as claimed in claim 7,

Lee does not expressly call for: wherein a power for a transmitted pilot signal is equal to the power of information symbol sequences transmitted for each mobile user.

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters or to transmit a pilot signal equal to the information symbol.

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Referring to claim 9, Lee teaches: The DS-CDMA system as claimed in claim 8,

Lee does not expressly call for: where as power for a transmitted pilot signal increases, a power transmitted for each mobile user decreases for the same total transmitted power

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters transmitted pilot signal increases, a power transmitted for each mobile user decreases for the same total transmitted power

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Referring to claim 16, Lee teaches: the apparatus as claimed in claim 15
Lee does not expressly call for: wherein a power for a transmitted pilot signal is equal to the power of information symbol sequences transmitted for each mobile user.

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters or to transmit a pilot signal equal to the information symbol.

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Referring to claim 17, Lee teaches: the apparatus as claimed in claim 16

Caire teaches: high power values can be transmitted per Abstract or per Para 1.0. It is within the level of one skilled in the art to adjust parameters transmitted pilot signal increases, a power transmitted for each mobile user decreases for the same total transmitted power

It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the power or the pilot signals because the receiver automatically cancels the pilot signal out while the increased power level enables the receiver to readily lock on the pilot signal.

Response to Amendment

7. Applicant's arguments filed 12/06/05 have been fully considered but they are not persuasive.

The examiner respectively disagrees with the applicant argument that the objection to claim 14 is not proper. The applicant's argument that matrices are described in detail in the specification

does not an answer to the response that the dependent claim does not show a clearly defined post solution nor is it a proper response that the variables need to defined in the claim. Claims which do not show a clear post solution are algorithms and are not patentable.

The examiner respectively disagrees with the applicant's argument that the reference does not disclose transmission over a single channel. The reference teaches DS CDMA which spreading codes are used to spread the signals into chip sequences per col. 1 lines 32-53. DS CDMA inherently utilizes a single channel.

The applicant has broadly claimed a pilot sequence in the claim language. The examiner respectively disagrees with the applicant's argument that it is not obvious that the training sequence is obviously a pilot sequence because it performs the same function. The applicant argument that novelty comes from naming a function a different name is not persuasive.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Wilson whose telephone number is 571/272-3075. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on 571/272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert W. Wilson

Robert W Wilson
Examiner
Art Unit 2661

RWW
1/9/06

BOB PHUNKULH
PRIMARY EXAMINER